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ABSTRACT

The variables of teacher self efficacy, locus of control, and attribution of responsibility are important in classroom situations for both teachers and students. This paper discusses some theoretical considerations associated with these three variables and various instruments and scales used to measure them. Results are presented from a study that examined teachers' sense of responsibility for positive and negative student outcomes, taking teachers' sex, years of teaching experience, and grade level into consideration. These findings are compared to other research on teachers' attribution of responsibility and discussed within the context of findings from past research on correlations between locus of control, self-efficacy, and attribution of responsibility. The Responsibility for Student Achievement Questionnaire (Guskey) was administered to 308 elementary and secondary teachers in Portugal. The teachers who were studied attributed to themselves more responsibility for success than for failure. In general, female teachers assumed more responsibility for success and less for failure than did their male counterparts. No significant differences regarding grade level or years of experience were found. (IAH)

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SOCIO-COGNITIVE VARIABLES OF TEACHERS AND THEIR INFLUENCE ON TEACHING

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In the last three decades (since the 60's), a lot of research has been done on the cognitive variables of personality. Thousands of papers have been presented on the Locus of Control construct, for instance. Other variables such as Attribution of Causality (Attribution of Responsibility), Self-Efficacy (and others, such as: Self-Concept, Self-Esteem, etc.), Learned Helplessness, and related subjects have also been studied frequently in correlation.

In order to study the influence of these variables on teachers'behavior and particularly on the academic achievement of pupils, we selected 3 variables (LOC, AC, SE) using 3 Scales for teachers, which we adapted to the Portuguese population: a LOC scale: TRS of Anderson and Maes (1986); a self-responsibility scale: RSA of Guskey (1981); a self-efficacy scale: TE of Gibson and Dembo (1984). We will study only the results obtained with Guskey's scale. But first we should like to state our theoretical critical positions and we shall refer to some studies about educational applications of these paradigms.

THEORETICAL FRAMEWORK

Locus of Control

Internal versus External control of reinforcement (sometimes refered to as "Locus of Control", says Rotter (1975, p.56) is a variable which he studied from the beginning (Rotter, 1966), after some preliminary studies, within his Social Learning Theory (1954). The role of reinforcement is important but may be differently perceived by the subjects: as contingent upon their own behavior or controlled by forces outside of themselves, independently of their own actions. This is Rotter's (1966, p.1) classic definition which he repeats in other paper (1975, p. 57):

> "When a reinforcement is perceived by the subject as following some actions of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control"

Later, Rotter (1982, p. 313) describes LOC as follows:

> "In general, internal-external control refers to the degree to which the individual believes that what happens to him or her results from his or her own behavior versus the degree to which the individual believes that what happens to him or her is the result of luck, chance, fate, or forces beyond his or her control"

But Rotter did not always define the LOC in the same way, even in the beginning. He sometimes spoke in terms of causality. After him, other authors are also not clear in understanding this paradigm. Strickland (1978) reports that one of the greatest difficulties in research with the I-E dimension lies in the different definitions given to this construct (in Palenzuela, 1984, p. 684).

According to Rotter, LOC is a generalized expectancy, attitude or belief depending upon the individual's history of reinforcement. The individual generalizes expectancies from a specific situation to a series of situations perceived as related or similar. "Such generalized expectancies, in combination with specific expectancies, act to determine choice behavior along with the value of potencial reinforcement" (Rotter, 1966, p. 2). Later, Rotter (1975, p. 59) states that "the distinction between specific expectancy

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and generalized expectancy is also arbitrary and is only a means of clarifying the problem of arriving at an accurate estimate".

LOC is not a typology, as Rotter says (1966, p. 19): "We are dealing with only a variable affecting behavior and we are not implying a typology of any kind" (cf. 1975, 57 and 62). He speaks in terms of "degrees of belief" (Rotter, 1982, p.313), but in his classic definition refers to LOC as "relatively permanent characteristics" (Rotter, 1966, p. 1).

These difficulties in conceptualization of the construct are reflected in the scales (there are more than 50 of them for children, adults, teachers, etc.). Some ambiguity is present also in the formulation of the items of the original Scale I-E of Rotter (1966) with 29 items (6 are fillers) of forced-choice between I and E. Rotter (1975, p. 61) asserts that the Likert format was discarded in favor of a forced instrument in order to reduce correlations with Social Desirability Scale. In any case it is well-known that such measures change in their relationship to social desirability under different testing conditions.

Rotter's scale is a generalized and monofactorial scale. But these characteristics are criticized by many authors, who think that specific scales would be better and that Rotter's scale is not unifactorial but multifactorial (cf. Phares, 1978, p. 275). Rotter (1966) speaks also about specific expectancies, but really his scale is constructed with generalized expectancies. About the number of factors, he says that "much of the variance was included in a general factor. Several additional factors involved only a few items, and only a small degree of variance for each factor could be isolated. These additional factors, however, were not sufficiently reliable to suggest any clear-cut subscales within the test (Rotter, 1966, p. 16). Rotter (1975, p. 63) returns to this question of uni-versus multidimensionality: "Factor analyses do not reveal 'the true structure of the construct'. They only reveal the kinds of similarities perceived by a particular group of subjects for a particular selection of items". This is not to discourage factor analysis but to discourage the notion that the factor analysis of any particular scale reveals the 'true structure of a concept'. "Whether or not the resulting factors are usable can only be demonstrated by showing that they have a logical and significant prediction to a set of criteria".

Another problem of LOC scales is about their nature, i.e., if it is really a LOC scale or a attributional scale or self-efficacy scale, etc. It seems that the Rotter's scale is a I-E scale, although there are items of causality, like the first three, with expressions like <u>because</u>, <u>due to</u>, <u>result from</u>.

There are some other problems with Rotter's scale as to the kind of externality it controls, and if it controls the positive or negative results. According to Brewin and Shapiro (1984, p. 44) it is predominantly concerned with control over positive outcomes. Another problem is that there are defensive or competitive externals and passive or congruent externals, which can correspond to Levenson's distinction (Rotter, 1975, pp. 64-65), Rotter Scale controls essentially the latter.

Rotter (1975, p. 66) admits "the limitations of this construct and its measurement". He concludes his article of 1975 (p. 66) with a warning which must be taken into consideration: "New methods of measurement and new scales, general or more specific, may be justified and needed, but the mere developement of instruments without theoretical or practical justification based on the factor structure of old ones does not seem promising".

Used in educational situations, this generalized scale is not so useful, because it contemplates only 3 items about academic achievement. In the primitive scale of 100 and 60 items there were many items dealing with academic achievement but they "had to be dropped because of high correlations with social desirability" (Rotter, 1975, p. 61). In any case the I-E scale was used a lot in educational research. In our study we prefered a specific LOC scale for teachers: <u>Teachers role survey</u> of Anderson and Maes (1986).

<u>Attribution of causality</u> (attribution of responsibility)

Another variable often related (and frequently confused) with LOC is causal attribution or attribution of responsibility. But before comparing LOC with causal perception or causal attribution we must clarify the distinction between <u>attribution of causality</u> and <u>attribution of responsibility</u>. There is pratically no distinction when the causal is internal: if I do not succeed in school because I do not study, then I am responsible for it. But if the causality is external, then I am not responsible. However, in this case, there is also an attribution of responsibility in a negative form which is always implicit (I am not

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responsible). Weiner (1986, p. 22) distinguishes between outcome and action and also between causes and reasons (justifications). He concludes that "not all causes are attributions of responsibility just as not all causes are reasons", and also: "an attribution of responsibility presupposes one of causality, but not vice versa" (p. 22). However we think that these distinctions are not necessary and we can continue to speak in terms of attribution of causality and/or attributions of responsibility.

At the moment, the distinction (which is not easy to make) between LOC and causal attribution is more important. Rotter (1966, p. 2) speaks also of "causal relationship" between the behavior and the reward: "individuals would differ in the degree to which they attributed reinforcement to their own actions". Rotter (1966, p. 4) also points out that it would seem that some relationship would exist "between how the individual views the world from the point of view of internal versus external control of reinforcement and his other modes of perception of causal relationship".

A great number of studies have compared LOC with AC (attribution of causality) and have generally found significant correlations between the two variables which suggest two components of LOC: general and specific expectancies (cf. Fanelli, 1977, p. 52).

Weiner et al. (1972) (in Fanelly, 1977, pp. 52-53) reanalyzed the concept of LOC in terms of four elements: ability, effort, task difficulty and luck. The authors separate these four elements across two dimensions: LOC and stability. They suggest that changes in expectancy depend not on the LOC dimension but on the stability dimension. Then we have this table of attribution of responsibility:

Stability	Locus of control	
	Internal	External
fixed	ability	task difficulty
unstable (variable)	effort	luck

Later, Weiner (1979) (in Palenzuela, 1984, p. 684) separated locus of control into locus and control which were considered as two independent attributional dimensions. Locus or locus of causality refers to whether the cause of reinforcement is internal or external, and control or controllability refers to whether the cause is controllable or uncontrollable. According to Weiner (1979; in Brewin and Shapiro, 1984, p. 84), attributions along the I/E dimension primarily influence affective reactions to success and failure. Brewin and Antaki (1982) propose that the controllability dimension influences a person's perception of his/her own competence or, to use Bandura's (1977) term, self-efficacy. Thus, the LOC scales should be useful in predicting affective responses, while controllability scales should predict changes in expectancy and subsequent behavior.

Whether one accepts these distinctions or not, Zuroff (1980; in Palenzuela, 1984, p. 684) argued that the LOC is conceptually and operationally different from attribution: 1) locus of control is evaluated before an outcome has happened, while attributions are evaluated afterwards; 2) I-E in Rotter's theory refers to whether the outcome is perceived as contingent or noncontingent with one's behavior, while in attribution theory I-E refers to whether the causes are physically inside or outside a person. The first distinction was later emphasized by Rotter (1982), (p. 316) more specifically: "Expectations regarding causality before an event differ from beliefs after the event. Similarly, expressed beliefs after an event are not necessarily the same as implicit beliefs". There is a tendency to accept the atributions literally (and naively), but people do not really always believe their own expressed attributions. Rotter (1982, p. 317) notes also two factors determining attributions: the unexpected nature of the event, and the occurrence of strong reinforcement, particularly negative ones.

According to some authors it is also necessary to distinguish between the attribution of responsibility for positive and negative outcomes. Many people have a tendency to attribute success internally and failure externally. As Ickes and Layden (1978; in Brewin and Shapiro, 1984, p. 43) point out, it is not clear whether 'internal control of negative outcomes' means that someone caused the negative event or whether it means that the outcome can be escaped or avoided and therefore 'controlled'. Brewin and Shapiro (1984, p. 47) interprete 'control over negative outcomes' as causality for negative outcomes. Sometimes it is impossible to know when a positive outcome is being attained rather than a negative one avoided (for instance, when people stop smoking are they avoiding a negative outcome (increased risk of disease) or attaining a positive one (feeling healthier and saving money)?

All these distinctions, and sometimes contradictions, which distinguish this construct from causal attributions resound in the Scales. Some of LOC scales have been used as attribution of responsibility, even the Rotter scale, but there are also specific scales of attribution, for instance Brewin and Shapiro's (1984) scale of attribution of responsibility for positive and negative outcomes. This is a generalized scale. In our study we have used a specific scale for teachers: The responsibility for student achievement questionnaire (RSA) of Guskey (1981).

Self-efficacy

This is also a construct or a paradigm which has been studied frequently with teachers. But is also a complex concept which is difficult to define. It can be confused with Locus of Control, principally with internality. But Bandura (1977) argued that although locus of control is primarily concerned with causal beliefs about action-outcome contingencies, personal efficacy is concerned with the conviction that one can successfully execute the behavior required to produce the outcomes. But in reality sometimes it seems that self-efficacy expectancies are almost internality and outcomes expectancies are near to externality (cf. Palenzuela, 1986, pp. 48 and 57).

The self-efficacy concept is also near self-responsibility. According to Guskey (1987, p. 41) the only major difference appears to be in tense. Efficacy refers to projected potency in a particular situation and is generally present or future directed. Responsibility, on other hand, is an attribution reference that is reflective and directed toward the past. But in most cases "efficacy and responsibility are considered synonymous".

This construct comes practically from Bandura (1977, 1978) who distinguished between outcome expectancy and (self)efficacy expectancy: one can believe that certain behavior will produce certain outcomes, but if one does not believe that one can perform the necessary activities, one will not initiate the relevant behaviors, or, if one does, one will not persist. In the case of teachers, they may believe that certain practices of teaching will affect student performance (general efficacy), but, at the same time, may not believe they can perform those necessary activities (personal efficacy). Bandura seems to have integrated two ideas: that of competence (self-efficacy) and that of expectancy (outcome expectancy) (cf. Palenzuela, 1986, pp. 43-44).

Not every author agrees with the distinction between these two dimensions. But surely teacher efficacy is multidimensional, "consisting of at least two dimensions that correspond to Bandura's two-component model of self-efficacy" (Gibson and Dembo, 1984, p. 579). These authors present a scale with these two dimensions. But Guskey (1987) thinks that there are other context variables that affect measures of teacher efficacy, and presents a model describing three context variables: the nature of student performance outcome (positive or negative), the ability of student involved (high or low) and the scope of influence (single student or group of students).

All these difficulties, principally about outcome expectancy, and also sometimes the confusion between the expectancies of locus of control and those of outcome and efficacy are later reflected at an operational level. And so, for example, some authors have used the scale of Rotter to measure self-efficacy. But there are also specific scales to measure teacher efficacy, like Gibson and Dembo (1984) distinguishing the two factors of Bandura. We can also consider the RSA of Guskey (1981) as a scale of self-efficacy, although it is directly a scale of attribution of responsibility.

INFLUENCE OF THESE COGNITIVE VARIABLES ON TEACHING

After some theoretical considerations about Locus of control, attribution of responsibility and self-efficacy and their instruments of measures or scales, let us turn to bibliographical analyses about educational implications:

Locus of control

Many studies show that internal children have greater school achievement than externals. This

correlation is more consistent in elementary and in secondary school where the situation is more ambiguous, than in colleges where students have a highly structured and very familiar experience. It depends also on other variables, like age, gender, social status, etc. (cf. Findley and Cooper, 1983; Rotter, 1975; Phares 1978; Stipek and Weisz, 1984).

There has been less research on teachers. But they indicate that teachers with internal tendency have better achievement in school (Cooper and Baron, 1977; Brophy, 1979; Sherman and Giles, 1981; Rose and Medway, 1981a). Other authors have investigated this construct with other mediated or interactive variables such as the behavior of teachers and pupils (Rose and Medway, 1981b). In other research the relationship between Locus of control and academic achievement is present only indirectly, in the sense that more internal teachers feel themselves more responsible for success and failure, have more iniciative and are more persistent (Guskey 1981). These internal teachers manifest a relative rejection of student autonomy by assumption of responsibility for class control (Janzen et al., 1973). On the contrary, teachers with a tendency to externality have more tendency to helplessness (McIntyre, 1984).

These investigations are not enough to permit general conclusions and generally do not control important factors such as the sex of teachers, years of teaching experience, and grade level taught. A good exception is the study of Sherman and Giles (1981) which controls these variables. In our empirical research we shall also control these variables.

Attribution of responsibility

This construct is often studied in relationship with Locus of control and also with self-efficacy. Therefore we shall not spend more time on this situation. For instance, Bryant (1972) explored teacher-student attributions with a Locus of control scale. She found that teachers tended to attribute more negative characteristics to external students and that external students described their teachers more negatively than did internal students. Bryant concluded that students whose Locus of control is external have more painful relationships with their teachers than do internal students (in Fanelli, 1977, p. 57).

Weiner (1988) in a recent study about "Attribution theory in Education", as in his book (1986), presents the attributional theory as a new motivational approach to education. The causal attribution theory assumes that the way individuals answer "why" questions provides a key to the understanding of human motivation, particularly in the school, and also to the understanding of other emotions and behavior and to the explanation of success and failure.

Teacher (self)efficacy

The teacher's perceived sense of efficacy in teaching and learning situations is a powerful variable in studies of instructional effectiveness. For instance, Brookover and Lezotte (1979) found that teachers with a stronger sense of efficacy have better results and feel more responsible for the learning of their students. Armor et al. (1976) found that measures of teacher efficacy were strongly related to student gains in reading achievement.

There is no unanimity in defining teacher efficacy, but in general we can say that it is "the extent to which the teacher believes he or she has the capacity to affect student performance" (McLaughlin and Marsh, 1978, p. 84). It is a belief or conviction that the teacher can have or has the competence to influence academic achievement considerably.

Difficulties come when we try to measure this construct. Generally one considers two dimensions, according to Bandura, but there are also other context variables that affect teacher efficacy and that must be taken into consideration in the Scales. (Guskey, 1987).

Gibson and Dembo (1984, p. 570), say that teachers who believe student learning can be influenced by effective teaching and have confidence in their own teaching abilities, "should persist longer, provide a greater academic focus in the classroom, and exhibit different types of feedback than teachers who have lower expectations concerning their ability to influence student learning". Gibson and Dembo (1984) constructed a original Scale based on the two factors of Bandura's theory of efficacy. They conclude that further elements of Bandura's theory of self-efficacy should be explored when related to teacher efficacy

(for example generality, magnitude, and strength of self-efficacy). Investigation is also needed about the relationship between a teacher's characteristics (sex, years of teaching experience, grade levels, personal attributes) and sense of efficacy, which is a situational variable. The relationship between teacher efficacy and student achievement should also be examined, determining whether measures of teacher efficacy predict student's achievement.

TEACHER'S SENSE OF RESPONSIBILITY (empirical research)

We consider these variables of the utmost importance in the classroom situation as far as teachers and pupils are concerned. Therefore we have procceded to adapt some Scales of the Portuguese population. In particular, in relation to teachers, which we have chosen to study, we have adapted a Locus of control scale (the TRS of Anderson and Maes, 1986) (Barros, Neto and Barros, 1988), a scale of responsibility (the RSA of Guskey, 1981) (Barros, Neto and Barros, in press), and the scale of teacher efficacy of Gibson and Dembo (1984) (Neto, Barros and Barros, in press).

This paper presents only the results of a research with teachers, taking sex, years of teaching experience and grade level into consideration. We present only the results with Responsibility for Student Achievement Questionnaire (RSA) of Guskey (1981), a scale which has reasonable psychometric characteristics, and which can also be considered, in some sense, a locus of control scale and a scale of self-efficacy. Really, the correlations between the 3 scales (table 1), suggest different but convergent constructs.

Method

The sample consisted of 308 teachers, 151 from elementary school and 157 from secondary school teaching in the Porto area, 62 male and 246 female, 102 having from 1 to 10 years teaching experience, 112 between 11 and 20 years, and 94 more than 20 years.

The instrument used was the RSA of Guskey (1981) specific for teachers in the academic situation, which consist of 30 items which have to be answered in percentage form between the alternative of responsibility for positive and negative outcomes.

Results

Table 2 shows the means and the standard deviations of total scores and subscales scores for male and female teachers. R+ (positive results) presents the highest means in the two sexes, which shows that teachers tend to attribute success to themselves more than failure. This tendency is particularly evident among female teachers. The research of Guskey (1981) shows the same tendency regarding success. Table 3 shows the means and the standard deviations of the RSA total and subscales scores for three groups of teachers divided according to their years of teaching experience in decades. The results indicate no great differences between the three groups. Guskey (1981) dividing the teachers in groups of 1-5 years, 6-10 years and more than 10 years of experience, noted that the trainee teachers and the most experienced teachers tend to feel more self-responsibility for positive achievement than do the middle group (6-10 years). Our division by decades was made for reasons of statistics (to have sufficient number of cases in each situation).

In table 4 the means and the standard deviations of RSA for two groups of teachers are listed on the basis of the grade level of student taught (elementary and secondary school). The tendency for elementary school teachers to take more responsibility for positive outcomes, but not for negative outcomes is noted. Guskey divided his sample into three groups (elementary grades 1-3, middle grades 4-8 and secondary grades 9-12) and he found there was a tendency for middle grade level teachers to assume less self-responsibility than the other groups.

In order to see if the differences between the various groups in each different variable were statistically significant, we performed an analyses of variance (Table 5). There is no main significant effect in the 3 variables in relation to R+ and R-. There are only interactive significant effects between years of teaching and grade level on R+, and between sex and years of teaching and between sex and grade

level on R-. Guskey found only a main effect of sex upon R+ scores and no interactive effects.

Discussion

We can affirm that, in general, the teachers we studied to attribute to themselves more responsibility for success than for the failure, which is understandable, at least as a mechanism of defense of their self-image. This happens with males and females. These results are consistent with other researchs. But the females assume more responsibility for success and less for failure, perhaps according to sex idiosyncracies. As regards years of teaching experience, there are practically no differences, perhaps due to our system of distribution. Finally, as regards grade level, there are also practically no differences between elementary and secondary school teachers.

It is not always possible to compare our results with Guskey's (1981) results, because of the different distribution by years of teaching experience and by grade level. However, as regards sex, there is a coincidence for R+ (the females are more responsible), but not for R- (in our study the males are more responsible and in Guskey the females are).

In general these results about sex are similar to our other studies with Locus of control scales (where female teachers are more internal) (Barros, Neto, and Barros, 1988) and with teacher efficacy scales (females have more sense of personal efficacy) (Neto, Barros and Barros, in press). But more research is needed in order to better promote the education of teachers and academic achievement, most dependent on the cognitive- affective variables, such as those we have studied. We also intend to study the relationship between these constructs and teachers behavior and scholastic success.

Table 1 - Correlations between the TRS, the RSA and the Teacher Efficacy Scale

	TRS	TR	R+	R-	GD1	GD2
TRS (And-Maes)	-	-.34***	-.24***	-.29***	-.26***	.20***
RSA (Guskey)						
Total R	-.34***	-	.62***	.88**	.17**	-.14**
R+	-.24***	.62***	-	.17***	.32	-.10*
R-	-.29***	.88***	.17***	-	.02	-.11*
TE (Gibson-D.)						
Pers. ef.(f.1)	-.26***	.17**	.32***	.02	-	.24***
Gen.ef.(f.2)	.20***	-.14**	-.10*	-.11*	.24***	-

* < .05
** < .01 (Source: Barros e Barros, in press)
*** < .001

Table 2 - Means and standard deviations of RSA scores by sex

Scale	Males (N=62)		Females (N=246)	
	X	S.D.	X	S.D.
Total R	53.2	9.8	53.4	8.4
R+	58.9	8.0	60.9	8.4
R-	47.4	15.1	45.8	13.6

Table 3 - Means and standard deviations of RSA scores by years of teaching experience

Scale	1-10 years (N=102)		11-20 years (N=112)		+20+years (N=94)	
	X	S.D.	X	S.D.	X	S.D.
Total R	53.3	8.8	53.6	7.9	53.1	9.5
R+	60.7	8.3	60.2	8.6	60.7	8.1
R-	46.0	13.7	47.0	12.6	45.4	15.7

Table 4 - Means and standard deviations of RSA scores by grade level

Scale	Elementary grades (N=151)		Secondary grades (N=157)	
	X	S.D.	X	S.D.
Total R	53.4	8.6	53.3	8.9
R+	61.1	8.5	60.0	8.2
R-	45.7	14.3	46.6	13.6

Table 5 - Analysis of variance for R+ and for R- subscales

	R+			R-		
Source	df	F	Prob.	df	F	Prob.
Sex	1	1.75	n.s	1	.45	n.s.
Years experience	2	.23	n.s	2	.33	n.s.
Grade level	1	.38	n.s	1	.04	n.s.
Sex x Years exp.	2	2.64	n.s	2	3.32	.038*
Sex x Grade level	1	.71	n.s	1	6.54	.011*
Years exp. x grade lev	2	4.23	.015*	2	.86	n.s.

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